HEWLETT hp PACKARD

D26-1Q

AUTOVOLTMETER

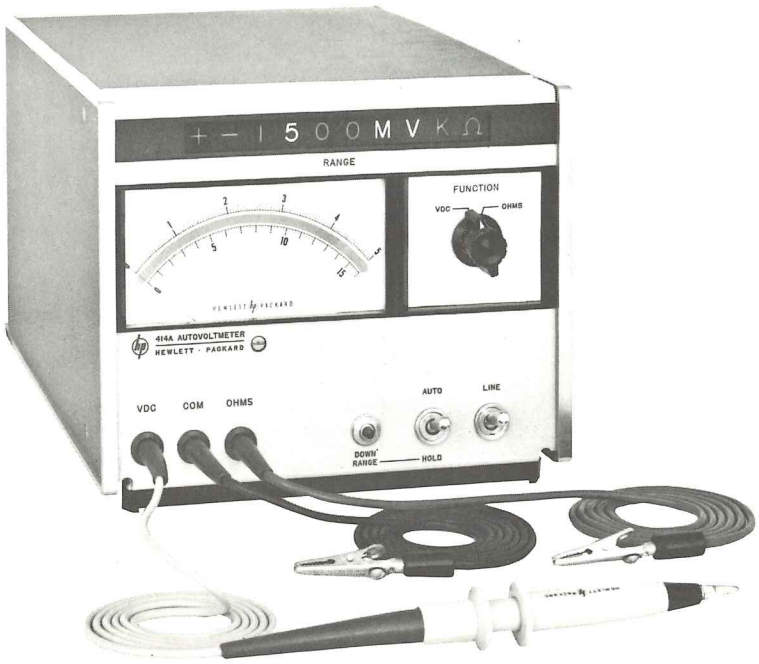
model 414A

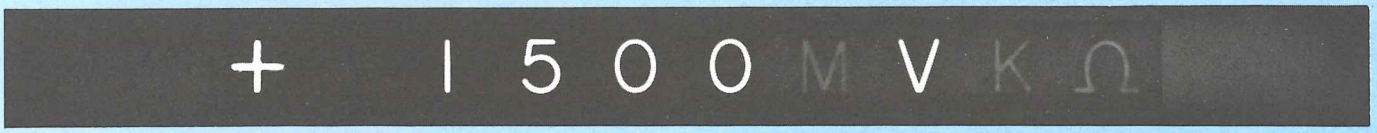
TECHNICAL DATA 1 JULY 65

measure 5 mv f.s. to 1500 vdc f.s.

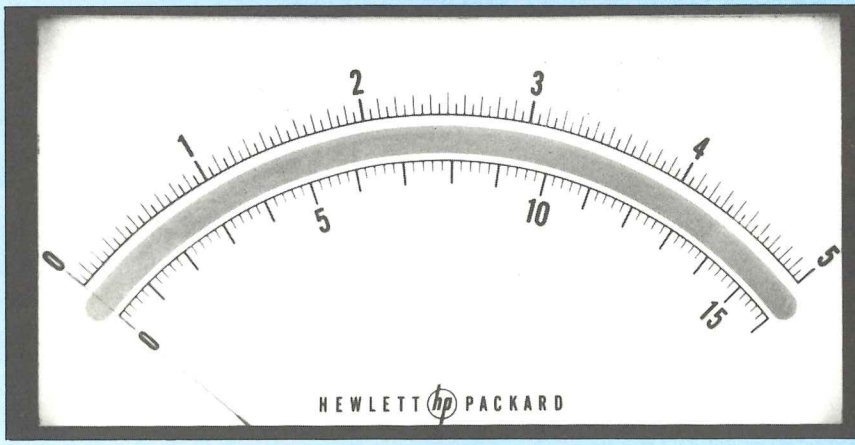
automatic ranging and polarity indication occur in less than 300 ms

something new in accuracy, ±0.5% of f.s., ±0.5% of reading

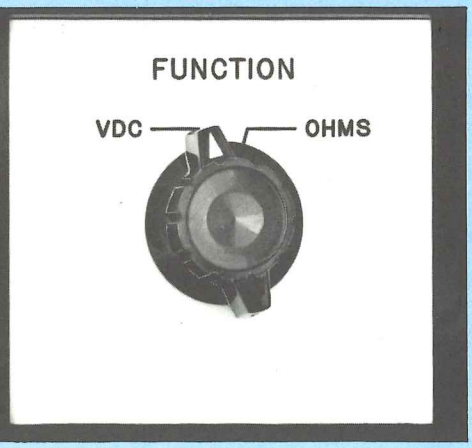




Digital Range Readout



Linear Volts/Ohms Scale



Select Voltage or Resistance... Ranging Automatic

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DESCRIPTION

A new 12-range all-solid-state dc volt-ohmmeter from Hewlett-Packard gives accurate measurements immediately with automatic range selection. Operation is simply touch and read. The Model 414A Autovoltmeter selects correct range and polarity less than 300 milliseconds after contact is made, displaying both range and polarity in illuminated characters.

DC voltages can be measured at sensitivities from 5 millivolts to 1500 volts full scale. Accuracy is ±0.5% of reading ±0.5% of full scale on the mirror backed, individually calibrated taut-band meter. Input resistance is 10 megohms on the 5 mv and 15 mv range, increasing to 100 megohms on the 50 millivolt range and above.

Resistance is presented on linear scale with full-scale ranges from 5 ohms to 1.5 megohms, which are automatically identified on the panel. Current through the unknown is 1 milliampere up to 5K ohms, 1 microampere above 5K ohms. Accuracy is ±1% of reading ±0.5% of full scale on all ranges.

The hp Model 414A was designed to serve bench and production operations where measurements over a wide range are taken in rapid succession. It offers speed and convenient analog analysis at low cost.

OPERATION

A dc amplifier, input attenuator, gain attenuator and metering circuits form the basic measuring circuit of the 414A Automatic Ranging Voltmeter.

This Auto Ranging Voltmeter is solid state. The dc amplifier is chopper-stabilized using hp produced photocell choppers for long life and reliability. A lighted display unit placed conveniently above the meter provides the user with the full scale sensitivity for the range and function selected. For voltage measurements, the polarity of the input voltage is also indicated. Ranges can be selected and held manually.

AUTO-RANGING

Range changing decisions are based on two preset signal levels; one near full scale meter deflection, and the other near 1/4 full scale. An amplitude comparator produces an "up" range signal whenever the input voltage tends to rise above the level which is near full scale, and a "down" range signal whenever the input voltage tends to fall below the level near 1/4 full scale.

Range switching and indication logic consists of a set of four solid state multivibrators which define the twelve ranges of the instrument. The ohmeter function employs a feedback-stabilized current source which allows the use of a linear ohms scale and avoids a special meter scale for resistance measurements. The resulting meter scales are easy to read.

CONVENIENCE-VERSATILITY

The 414A's modular design and light-weight construction contribute to its easy portability. Elimination of tedious range selection suits the voltmeter to production line work or similar situations where voltage measurements over a wide range are made.

SPECIFICATIONS

DC VOLTMETER

Voltage Range: ±5 millivolts to ±1500v full scale in twelve ranges. (Manual or auto-ranging).

Accuracy: ±0.5% of reading ±0.5% of full scale.

Input Resistance: 10 megohms on 5 and 15 mv ranges. 100 megohms on 50 mv range and above.

Superimposed AC Rejection: Insensitive to 60 cycle signal with rms value less than five times the full scale DC level of the range in use, when used in manual mode.

OHMMETER

Resistance Range: 5 ohms to 1.5 megohms in 12 ranges (Manual or auto-ranging with linear scale).

Accuracy: ±1% of reading ±0.5% of full scale on any range.

Source Current: Up to 5 K ohms 1 ma; Above 5 K ohms 1 μa.

GENERAL

Automatic Range Selection: Voltage and resistance: automatically selects correct range in less than 300 milliseconds.

Manual Range Selection: Down-ranges one range each time down range button is pressed. Starts over at 1500 volts from 5 mv range.

Polarity Selection: Automatic

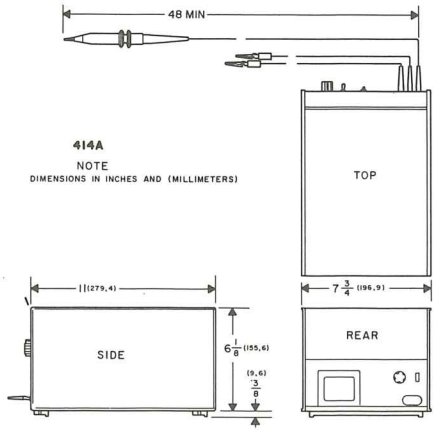
Meter: Individually calibrated taut band meter with mirror scale. Linear scale 0 to 5 and 0 to 15.

Isolation Resistance: At least 100 megohms shunted by .1 mf between common terminal and case (power line ground).

Floating Input: May be operated up to 500 vdc above ground.

Power: 115 or 230 volts ±10%, 50 to 1000 cps. Approx. 18 watts.

Outline Drawing:



Weight: Net: 10 1/4 lbs. (4,6 kg); Shipping: 13 lbs. (6,4 kg).

Price: $650.00

Prices f.o.b. factory
Data subject to change without notice
► Indicates change from prior specifications